

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
19 August 2004 (19.08.2004)

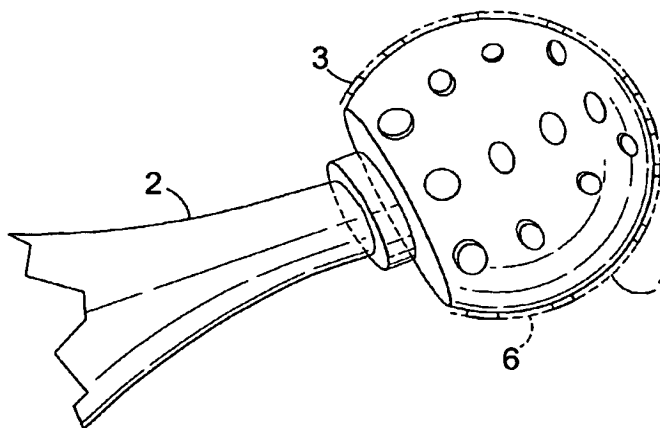
PCT

(10) International Publication Number
WO 2004/069062 A3

- (51) International Patent Classification⁷: **A61B 17/16, A61F 2/36**
- (21) International Application Number:
PCT/GB2004/000406
- (22) International Filing Date: 3 February 2004 (03.02.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
0302459.3 3 February 2003 (03.02.2003) GB
- (71) Applicant (for all designated States except US): **UNIVERSITY COLLEGE LONDON** [GB/GB]; Gower Street, London WC1 6BT (GB).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **BLUNN, Gordon** [GB/GB]; 24 North End, Bassingbourn, Royston, Hertfordshire SG8 5NY (GB). **GOODSHIP, Allen, E.** [GB/GB]; Foxglove, Coleman Green Lane, Wheathampstead, Hertfordshire AL4 8ET (GB). **FANG, Sze-Ching**; 3F, No. 11 Ho-Ping E. Rd. Sec. 3, Taipei (TW).
- (74) Agents: **WHITAKER, Iain, Mark et al.**; Marks & Clerk, 45 Grosvenor Road, St Albans, Hertfordshire AL1 3AW (GB).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:
— with international search report

[Continued on next page]

(54) Title: PROSTHETIC FEMORAL HEAD AND REAMER FOR HIP HEMIARTHROPLASTY



(57) Abstract: The present invention concerns apparatus and methods for hip refurbishment / replacement and in one aspect provides a kit comprising a femoral head (1) and reamer. The present invention also provides apparatus and methods for minimally invasive surgery on a hip or similar (eg shoulder) joint. The kit is suited for performing a hip hemiarthroplasty, in which a femoral head is fitted directly into a socket reamed into the acetabulum without any permanent liner or prosthetic acetabulum being implanted. The reamer is used to ream out the acetabulum until cancellous bone is exposed so that it bleeds liquid containing stem cells. By selecting the size of the femoral head in accordance with the characteristics of the patient, the pressure imposed on the liquid/ synovial fluid of the joint is in the range between (0.5) and 2MPa. This causes the stem cells to produce new cartilage between the bone and femoral head.



— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(88) Date of publication of the international search report:
2 December 2004

INTERNATIONAL SEARCH REPORT

10/544260

national Application No

PCT/GB2004/000406

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A61B17/16 A61F2/36

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A61B A61F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2 785 673 A (ROGER ANDERSON) 19 March 1957 (1957-03-19) column 9, line 64 - line 68; figures 14-20	1-3, 6, 8, 9
Y	US 5 895 375 A (CHERVITZ ALAN ET AL) 20 April 1999 (1999-04-20) column 1, lines 40-43 column 7, line 33 - line 37; figures 6, 7	4, 5, 7
Y	US 6 494 916 B1 (BABALOLA OMOTUNDE M ET AL) 17 December 2002 (2002-12-17) figures 2, 3	4
A	US 6 231 611 B1 (MOSSERI RAPHAEL) 15 May 2001 (2001-05-15) column 4, line 41 - column 5, line 47; figures 1-5 column 5, line 48 - column 6, line 6; figures 6-8	13

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *Z* document member of the same patent family

Date of the actual completion of the international search

10 September 2004

Date of mailing of the international search report

29.09.2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax (+31-70) 340-3016

Authorized officer

Hamann, J

INTERNATIONAL SEARCH REPORT

International application No.
PCT/GB2004/000406

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.: 10-12
because they relate to subject matter not required to be searched by this Authority, namely:
Rule 39.1(iv) PCT - Method for treatment of the human or animal body by surgery
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☒ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International Application No. PCT/GB2004 /000406

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.1

Claims Nos.: 10-12

Rule 39.1(iv) PCT - Method for treatment of the human or animal body by surgery

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB2004/000406

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 2785673	A	19-03-1957	NONE	
US 5895375	A	20-04-1999	US 5681289 A US 5891101 A	28-10-1997 06-04-1999
US 6494916	B1	17-12-2002	WO 03013388 A2 US 2003130742 A1	20-02-2003 10-07-2003
US 6231611	B1	15-05-2001	FR 2749753 A1 EP 0910316 A1 WO 9747257 A1 US 2001012967 A1	19-12-1997 28-04-1999 18-12-1997 09-08-2001